AMENDMENTS TO THE CLAIMS

Claims 1-13 (Cancelled)

14. (New) A method of photoinducing at least one linear and/or non-linear optical property in a structure comprising at least one photosensitive molecular material, in which method said structure is irradiated with at least two mutually coherent write light beams to modify the orientation of the molecules of said molecular material and/or the nature of the molecules as a function of their orientation,

characterized in that said structure is a confining structure and in that the write beams are parallel to a confinement direction or oblique relative thereto and distribute the linear and/or non-linear optical property(ies) over said confining structure in at least one direction perpendicular to said confinement direction, the photoinduced confining structure obtained in this way being suitable for propagating one or more "read" beams in guided configuration and presenting a property that results from the optical effect generated by causing one or more "pump" beams generating said effect to propagate in or through said photoinduced structure.

15. (New) A method according to claim 14, characterized in that the confining structure is scanned with at least one write light beam, and in that one (or more) parameters of at least one of the write beams is/are controlled as a function of relative displacement between said structure and said scanning beam(s).

16. (New) A method according to claim 15, characterized in that the writing performed in the irradiated zone by the scanning beam(s) is tested and relative displacement of the confining structure and of the scanning beam(s) is controlled as a function of the result of the test.

17. (New) A method according to claim 14, characterized in that the write beams are irradiated through a lens and in that one or more parameters of at least one of the write beams is/are controlled.

18. (New) A method according to claim 14, characterized in that the write beams are irradiated through a mask, and in that one or more parameters of at least one of the write beams is/are controlled.

19. (New) A method according to claim 14, characterized in that the write beams are irradiated through a holographic structure, and in that one or more of the parameters of at least one of the write beams is/are controlled.

20. (New) A method according to claim 19 characterized in that a parameter that is controlled on one or more of the write beams is beam intensity and/or polarization state and/or propagation direction and/or spatial overlap of a plurality of write beams and/or wavelength and/or relative phase between the beams.

21. (New) A method according to claim 20, characterized in that a parameter is controlled by generating noise on said parameter and by controlling the statistical characteristics of said noise.

22. (New) A method according to claim 14, characterized in that the temperature of the molecular material is controlled.

23. (New) A method according to claim 14, characterized in that said temperature is controlled by irradiation by means of an additional beam enabling local heating to be performed at the impact point of said write beams.

24. (New) A method according to claim 14, characterized in that the photoinduction beams write a quasi-phase matching grid for propagating the pump beam(s) and the read beams(s).

25. (New) A method according to claim 14, characterized in that the molecular material is previously oriented by applying an electric field and/or by heating.

26. (New) A method according to claim 14, characterized in that the confining structure is a portion of film and/or a ribbon light guide which extends along the propagation direction of the read beam(s) and/or a microcavity in which the read beam(s) propagate(s) in a loop, and/or an optical fiber, and/or a combination of such elements.

27. (New) A method of photoinducing at least one linear and/or non-linear optical property in a structure comprising at least one photosensitive

molecular material and of using said structure, in which method said structure is irradiated with at least two mutually coherent write light beams to modify the orientation of the molecules of said molecular material and/or the nature of the molecules as a function of their orientation,

characterized in that said structure is a confining structure, in that the write beams are parallel to a confinement direction or oblique relative thereto and distribute the linear and/or non-linear optical property(ies) over said confining structure in at least one direction perpendicular to said confinement direction, and in that one or more "pump" beams is/are caused to propagate in or through said photoinduced structure, with propagation thereof in or through said photoinduced structure generating an optical effect giving rise to a property in one or more "read" beams propagating in guided configuration in the photoinduced confining structure.

28. (New) A method according to claim 27, characterized in that the confining structure is scanned with at least one write light beam, and in that one (or more) parameters of at least one of the write beams is/are controlled as a function of relative displacement between said structure and said scanning beam(s).

29. (New) A method according to claim 28, characterized in that the writing performed in the irradiated zone by the scanning beam(s) is tested and relative displacement of the confining structure and of the scanning beam(s) is controlled as a function of the result of the test.

30. (New) A method according to claim 27, characterized in that the write beams are irradiated through a lens and in that one or more parameters of at least one of the write beams is/are controlled.

31. (New) A method according to claim 27, characterized in that the write beams are irradiated through a mask, and in that one or more parameters of at least one of the write beams is/are controlled.

32. (New) A method according to claim 27, characterized in that the write beams are irradiated through a holographic structure, and in that one or more of the parameters of at least one of the write beams is/are controlled.

33. (New) A method according to claim 32 characterized in that a parameter that is controlled on one or more of the write beams is beam intensity and/or polarization state and/or propagation direction and/or spatial overlap of a plurality of write beams and/or wavelength and/or relative phase between the beams.

34. (New) A method according to claim 33, characterized in that a parameter is controlled by generating noise on said parameter and by controlling the statistical characteristics of said noise.

35. (New) A method according to claim 27, characterized in that the temperature of the molecular material is controlled.

36. (New) A method according to claim 27, characterized in that said temperature is controlled by irradiation by means of an additional beam enabling local heating to be performed at the impact point of said write beams.

37. (New) A method according to claim 27, characterized in that the photoinduction beams write a quasi-phase matching grid for propagating the pump beam(s) and the read beams(s).

38. (New) A method according to claim 27, characterized in that the molecular material is previously oriented by applying an electric field and/or by heating.

39. (New) A method according to claim 27, characterized in that the confining structure is a portion of film and/or a ribbon light guide which extends along the propagation direction of the read beam(s) and/or a microcavity in which the read beam(s) propagate(s) in a loop, and/or an optical fiber, and/or a combination of such elements.

40. (New) A method of photoinducing at least one linear and/or non-linear optical property in a structure comprising at least one photosensitive molecular material, in which method said structure is irradiated with a multiphoton beam to modify the orientation of the molecules of said molecular material and/or the nature of the molecules as a function of their orientation,

characterized in that said structure is a confining structure and in that the write beams are parallel to a confinement direction or oblique relative thereto and distribute the linear and/or non-linear optical property (ies) over said confining structure in at least one direction perpendicular to said confinement direction, the photoinduced confining structure obtained in this way being suitable for propagating one or more "read" beams in guided configuration and presenting a property that results from the optical effect generated by causing one or more "pump" beams generating said effect to propagate in or through said photoinduced structure.

41. (New) A method according to claim 40, characterized in that the confining structure is scanned with at least one write light beam, and in that one (or more) parameters of at least one of the write beams is/are controlled as a function of relative displacement between said structure and said scanning beam(s).

42. (New) A method according to claim 41, characterized in that the writing performed in the irradiated zone by the scanning beam(s) is tested and relative displacement of the confining structure and of the scanning beam(s) is controlled as a function of the result of the test.

43. (New) A method according to claim 40, characterized in that the write beams are irradiated through a lens and in that one or more parameters of at least one of the write beams is/are controlled.

44. (New) A method according to claim 40, characterized in that the write beams are irradiated through a mask, and in that one or more parameters of at least one of the write beams is/are controlled.

45. (New) A method according to claim 40, characterized in that the write beams are irradiated through a holographic structure, and in that one or more of the parameters of at least one of the write beams is/are controlled.

46. (New) A method according to claim 45 characterized in that a parameter that is controlled on one or more of the write beams is beam intensity and/or polarization state and/or propagation direction and/or spatial overlap of a plurality of write beams and/or wavelength and/or relative phase between the beams.

47. (New) A method according to claim 46, characterized in that a parameter is controlled by generating noise on said parameter and by controlling the statistical characteristics of said noise.

48. (New) A method according to claim 40, characterized in that the temperature of the molecular material is controlled.

49. (New) A method according to claim 40, characterized in that said temperature is controlled by irradiation by means of an additional beam enabling local heating to be performed at the impact point of said write beams.

50. (New) A method according to claim 40, characterized in that the photoinduction beams write a quasi-phase matching grid for propagating the pump beam(s) and the read beams(s).

51. (New) A method according to claim 40, characterized in that the molecular material is previously oriented by applying an electric field and/or by heating.

52. (New) A method according to claim 40, characterized in that the confining structure is a portion of film and/or a ribbon light guide which extends along the propagation direction of the read beam(s) and/or a microcavity in which the read beam(s) propagate(s) in a loop, and/or an optical fiber, and/or a combination of such elements.

53. (New) A method of photoinducing at least one linear and/or non-linear optical property in a structure comprising at least one photosensitive molecular material and of using said structure, in which method said structure is irradiated with a multiphoton write light beam to modify the orientation of the molecules of said molecular material and/or the nature of the molecules as a function of their orientation,

characterized in that said structure is a confining structure, in that the write beams are parallel to a confinement direction or oblique relative thereto and distribute the linear and/or non-linear optical property(les) over said confining structure in at least one direction perpendicular to said confinement direction, and in that one or more "pump" beams is/are caused to propagate in or through said photoinduced structure,

with propagation thereof in or through said photoinduced structure generating an optical effect giving rise to a property in one or more "read" beams propagating in guided configuration in the photoinduced confining structure.

54. (New) A method according to claim 53, characterized in that the confining structure is scanned with at least one write light beam, and in that one (or more) parameters of at least one of the write beams is/are controlled as a function of relative displacement between said structure and said scanning beam(s).

55. (New) A method according to claim 54, characterized in that the writing performed in the irradiated zone by the scanning beam(s) is tested and relative displacement of the confining structure and of the scanning beam(s) is controlled as a function of the result of the test.

56. (New) A method according to claim 53, characterized in that the write beams are irradiated through a lens and in that one or more parameters of at least one of the write beams is/are controlled.

57. (New) A method according to claim 53, characterized in that the write beams are irradiated through a mask, and in that one or more parameters of at least one of the write beams is/are controlled.

58. (New) A method according to claim 53, characterized in that the write beams are irradiated through a holographic structure, and in that one or more of the parameters of at least one of the write beams is/are controlled.

59. (New) A method according to claim 58 characterized in that a parameter that is controlled on one or more of the write beams is beam intensity and/or polarization state and/or propagation direction and/or spatial overlap of a plurality of write beams and/or wavelength and/or relative phase between the beams.

60. (New) A method according to claim 59, characterized in that a parameter is controlled by generating noise on said parameter and by controlling the statistical characteristics of said noise.

61. (New) A method according to claim 53, characterized in that the temperature of the molecular material is controlled.

62. (New) A method according to claim 53, characterized in that said temperature is controlled by irradiation by means of an additional beam enabling local heating to be performed at the impact point of said write beams.

63. (New) A method according to claim 53, characterized in that the photoinduction beams write a quasi-phase matching grid for propagating the pump beam(s) and the read beams(s).

64. (New) A method according to claim 53, characterized in that the molecular material is previously oriented by applying an electric field and/or by heating.

65. (New) A method according to claim 53, characterized in that the confining structure is a portion of film and/or a ribbon light guide which extends along the propagation direction of the read beam(s) and/or a microcavity in which the read beam(s) propagate(s) in a loop, and/or an optical fiber, and/or a combination of such elements.

66. (New) A method of photoinducing at least one linear and/or non-linear optical property in a structure comprising at least one photosensitive molecular material, in which method said structure is irradiated with at least two mutually coherent write light beams which intensity, polarization states, relative phases, propagation directions, spatial overlap and wavelengths are controlled, to modify the orientation of the molecules of said molecular material and/or the nature of the molecules as a function of their orientation,

characterized in that said structure is a confining structure, in that the write beams are parallel to a confinement direction or oblique relative thereto and distribute the linear and/or non-linear optical property(ies) over said confining structure in at least one direction perpendicular to said confinement direction, and in that one or more "pump" beams is/are caused to propagate in or through said photoinduced structure, with propagation thereof in or through said photoinduced structure generating an

optical effect giving rise to a property in one or more "read" beams propagating in guided configuration in the photoinduced confining structure.

67. (New) A method according to claim 66, characterized in that the confining structure is scanned with at least one write light beam, and in that one (or more) parameters of at least one of the write beams is/are controlled as a function of relative displacement between said structure and said scanning beam(s).

68. (New) A method according to claim 67, characterized in that the writing performed in the irradiated zone by the scanning beam(s) is tested and relative displacement of the confining structure and of the scanning beam(s) is controlled as a function of the result of the test.

69. (New) A method according to claim 66, characterized in that the write beams are irradiated through a lens and in that one or more parameters of at least one of the write beams is/are controlled.

70. (New) A method according to claim 66, characterized in that the write beams are irradiated through a mask, and in that one or more parameters of at least one of the write beams is/are controlled.

71. (New) A method according to claim 66, characterized in that the write beams are irradiated through a holographic structure, and in that one or more of the parameters of at least one of the write beams is/are controlled.

72. (New) A method according to claim 71, characterized in that a parameter is controlled by generating noise on said parameter and by controlling the statistical characteristics of said noise.

73. (New) A method according to claim 66, characterized in that the temperature of the molecular material is controlled.

74. (New) A method according to claim 66, characterized in that said temperature is controlled by irradiation by means of an additional beam enabling local heating to be performed at the impact point of said write beams.

75. (New) A method according to claim 66, characterized in that the photoinduction beams write a quasi-phase matching grid for propagating the pump beam(s) and the read beams(s).

76. (New) A method according to claim 66, characterized in that the molecular material is previously oriented by applying an electric field and/or by heating.

77. (New) A method according to claim 66, characterized in that the confining structure is a portion of film and/or a ribbon light guide which extends along the propagation direction of the read beam(s) and/or a microcavity in which the read beam(s) propagate(s) in a loop, and/or an optical fiber, and/or a combination of such elements.

78. (New) A method of photoinducing at least one linear and/or non-linear optical property in a structure comprising at least one photosensitive molecular material and of using said structure, in which method said structure is irradiated with at least two mutually coherent write light beams which intensity, polarization states, relative phases, propagation directions, spatial overlap, wavelengths are controlled, to modify the orientation of the molecules of said molecular material and/or the nature of the molecules as a function of their orientation,

characterized in that said structure is a confining structure, in that the write beams are parallel to a confinement direction or oblique relative thereto and distribute the linear and/or non-linear optical property(ies) over said confining structure in at least one direction perpendicular to said confinement direction, and in that one or more "pump" beams is/are caused to propagate in or through said photoinduced structure, with propagation thereof in or through said photoinduced structure generating an optical effect giving rise to a property in one or more "read" beams propagating in guided configuration in the photoinduced confining structure.

79. (New) A method according to claim 78, characterized in that the confining structure is scanned with at least one write light beam, and in that one (or more) parameters of at least one of the write beams is/are controlled as a function of relative displacement between said structure and said scanning beam(s).

80. (New) A method according to claim 79, characterized in that the writing performed in the irradiated zone by the scanning beam(s) is tested and relative displacement of the confining structure and of the scanning beam(s) is controlled as a function of the result of the test.

81. (New) A method according to claim 78, characterized in that the write beams are irradiated through a lens and in that one or more parameters of at least one of the write beams is/are controlled.

82. (New) A method according to claim 78, characterized in that the write beams are irradiated through a mask, and in that one or more parameters of at least one of the write beams is/are controlled.

83. (New) A method according to claim 78, characterized in that the write beams are irradiated through a holographic structure, and in that one or more of the parameters of at least one of the write beams is/are controlled.

84. (New) A method according to claim 83, characterized in that a parameter is controlled by generating noise on said parameter and by controlling the statistical characteristics of said noise.

85. (New) A method according to claim 78, characterized in that the temperature of the molecular material is controlled.

86. (New) A method according to claim 78, characterized in that said temperature is controlled by irradiation by means of an additional beam enabling local heating to be performed at the impact point of said write beams.

87. (New) A method according to claim 78, characterized in that the photoinduction beams write a quasi-phase matching grid for propagating the pump beam(s) and the read beams(s).

88. (New) A method according to claim 78, characterized in that the molecular material is previously oriented by applying an electric field and/or by heating.

89. (New) A method according to claim 78, characterized in that the confining structure is a portion of film and/or a ribbon light guide which extends along the propagation direction of the read beam(s) and/or a microcavity in which the read beam(s) propagate(s) in a loop, and/or an optical fiber, and/or a combination of such elements.

90. (New) A method of photoinducing at least one linear and/or nonlinear optical property in a structure comprising at least one photosensitive molecular material, in which method said structure is irradiated with a multiphoton write light beam which intensity, polarization state, propagation direction, wave length, are controlled to modify the orientation of the molecules of said molecular material and/or the nature of the molecules as a function of their orientation,

characterized in that said structure is a confining structure and in that the write beams are parallel to a confinement direction or oblique relative thereto and distribute the linear and/or non-linear optical property(ies) over said confining structure in at least one direction perpendicular to said confinement direction, the photoinduced confining structure obtained in this way being suitable for propagating one or more "read" beams in guided configuration and presenting a property that results from the optical effect generated by causing one or more "pump" beams generating said effect to propagate in or through said photoinduced structure.

91. (New) A method according to claim 90, characterized in that the confining structure is scanned with at least one write light beam, and in that one (or more) parameters of at least one of the write beams is/are controlled as a function of relative displacement between said structure and said scanning beam(s).

92. (New) A method according to claim 91, characterized in that the writing performed in the irradiated zone by the scanning beam(s) is tested and relative displacement of the confining structure and of the scanning beam(s) is controlled as a function of the result of the test.

93. (New) A method according to claim 90, characterized in that the write beams are irradiated through a lens and in that one or more parameters of at least one of the write beams is/are controlled.

94. (New) A method according to claim 90, characterized in that the write beams are irradiated through a mask, and in that one or more parameters of at least one of the write beams is/are controlled.

95. (New) A method according to claim 90, characterized in that the write beams are irradiated through a holographic structure, and in that one or more of the parameters of at least one of the write beams is/are controlled.

96. (New) A method according to claim 90, characterized in that a parameter is controlled by generating noise on said parameter and by controlling the statistical characteristics of said noise.

97. (New) A method according to claim 90, characterized in that the temperature of the molecular material is controlled.

98. (New) A method according to claim 90, characterized in that said temperature is controlled by irradiation by means of an additional beam enabling local heating to be performed at the impact point of said write beams.

99. (New) A method according to claim 90, characterized in that the photoinduction beams write a quasi-phase matching grid for propagating the pump beam(s) and the read beams(s).

100. (New) A method according to claim 90, characterized in that the molecular material is previously oriented by applying an electric field and/or by heating.

101. (New) A method according to claim 90, characterized in that the confining structure is a portion of film and/or a ribbon light guide which extends along the propagation direction of the read beam(s) and/or a microcavity in which the read beam(s) propagate(s) in a loop, and/or an optical fiber, and/or a combination of such elements.

102. (New) A method of photoinducing at least one linear and/or nonlinear optical property in a structure comprising at least one photosensitive molecular material and of using said structure, in which method said structure is

irradiated with a multiphoton write light beam which intensity, polarization state, propagation direction, wave length, are controlled or with at least two mutually coherent write light beams to modify the orientation of the molecules of said molecular material and/or the nature of the molecules as a function of their orientation,

characterized in that said structure is a confining structure, in that the write beams are parallel to a confinement direction or oblique relative thereto and distribute the linear and/or non-linear optical property(ies) over said confining structure in at least one direction perpendicular to said confinement direction, and in that one or more "pump" beams is/are caused to propagate in or through said photoinduced structure, with propagation thereof in or through said photoinduced structure generating an optical effect giving rise to a property in one or more "read" beams propagating in guided configuration in the photoinduced confining structure.

103. (New) A method according to claim 102, characterized in that the confining structure is scanned with at least one write light beam, and in that one (or more) parameters of at least one of the write beams is/are controlled as a function of relative displacement between said structure and said scanning beam(s).

104. (New) A method according to claim 103, characterized in that the writing performed in the irradiated zone by the scanning beam(s) is tested and relative displacement of the confining structure and of the scanning beam(s) is controlled as a function of the result of the test.

105. (New) A method according to claim 102, characterized in that the write beams are irradiated through a lens and in that one or more parameters of at least one of the write beams is/are controlled.

106. (New) A method according to claim 102, characterized in that the write beams are irradiated through a mask, and in that one or more parameters of at least one of the write beams is/are controlled.

107. (New) A method according to claim 102, characterized in that the write beams are irradiated through a holographic structure, and in that one or more of the parameters of at least one of the write beams is/are controlled.

108. (New) A method according to claim 102, characterized in that a parameter is controlled by generating noise on said parameter and by controlling the statistical characteristics of said noise.

109. (New) A method according to claim 102, characterized in that the temperature of the molecular material is controlled.

110. (New) A method according to claim 102, characterized in that said temperature is controlled by irradiation by means of an additional beam enabling local heating to be performed at the impact point of said write beams.

111. (New) A method according to claim 102, characterized in that the photoinduction beams write a quasi-phase matching grid for propagating the pump beam(s) and the read beams(s).

112. (New) A method according to claim 102, characterized in that the molecular material is previously oriented by applying an electric field and/or by heating.

113. (New) A method according to claim 102, characterized in that the confining structure is a portion of film and/or a ribbon light guide which extends along the propagation direction of the read beam(s) and/or a microcavity in which the read beam(s) propagate(s) in a loop, and/or an optical fiber, and/or a combination of such elements.